Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Use of Clock Spring® Repair

Compressors/Engines ☐
Dehydrators ☐
Pipelines ■
Pneumatics/Controls ☐
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Applicable sector(s):

■ Production ■ Processing ■ Transmission and Distribution

Partners reporting this PRO: Columbia Gas Transmission, Columbia Gulf Transmission

Other related PROs: Gas Main Flexible Liners

Technology/Practice Overview

Description

Non-leaking pipeline defects such as dents gouges or corrosion can cause a pipeline to rupture if left unrepaired. To repair these damaged areas, the defective pipe is taken out of service and replaced or covered with a split sleeve. Clock Spring® eliminates the need to shutdown the pipeline and vent gas in order to repair the defective pipeline.

Clock Spring® kit consists of a filler material, a thin composite wrap and a special adhesive, which are applied over the damaged area of a pipeline while in service. During repair, the pipeline operates at half of normal pressure. Partners currently use Clock Spring® repair because it allows continuous operation of the pipeline during repair, is inexpensive and eliminate methane losses from venting.

Methane Savings

5,400 Mcf/yr

Costs

Capital Costs (including installation)
☐ < $1,000 ☐ $1,000-$10,000 ■ > $10,000

Operating and Maintenance Costs (Annual)
■ < $100 ☐ $100-$1,000 ☐ > $1,000

Payback (Years)

■ 0-1 ☐ 1-3 ☐ 3-10 ☐ > 10

Principal Benefits

Reducing methane emissions was:

☐ **A primary justification for the project** ■ **An associated benefit of the project**

Operating Requirements

Reduce pipeline pressure during repair.

Applicability

Clock Spring® repair is suitable for non-leaking defects on fairly straight sections with up to 80% wall loss and no internal corrosion.

Methane Emission Reductions

Clock Spring® repair eliminates methane emissions by avoiding venting the pipeline. Methane emissions reduction is equal to the amount of gas contained in the pipe segment that is isolated and would have been vented if the pipeline were replaced. Partners reported using Clock Spring® repair 2 to 65 times per year, with methane emissions savings ranging from 526 to 27,500 Mcf per application.

Economic Analysis

Basis for Costs and Savings

Methane emission reductions of 2,614 Mcf/yr apply to repairing one 6 inch defect with up to 80% wall loss on a 20 inch pipeline at 350 psi. Isolation valves are located 10-miles apart. Cost of Clock Spring® repair consists of the cost of one repair kit and labor for 2 technicians (10hrs/days) for two days.

Discussion

This technology pays back immediately. Since the Clock Spring® repair system avoids service outages associated with pipeline shutdown, there is no revenue loss. This is the primary justification for un-looped pipelines. In addition, this practice decreases labor cost by reducing repair time from two weeks to two days.